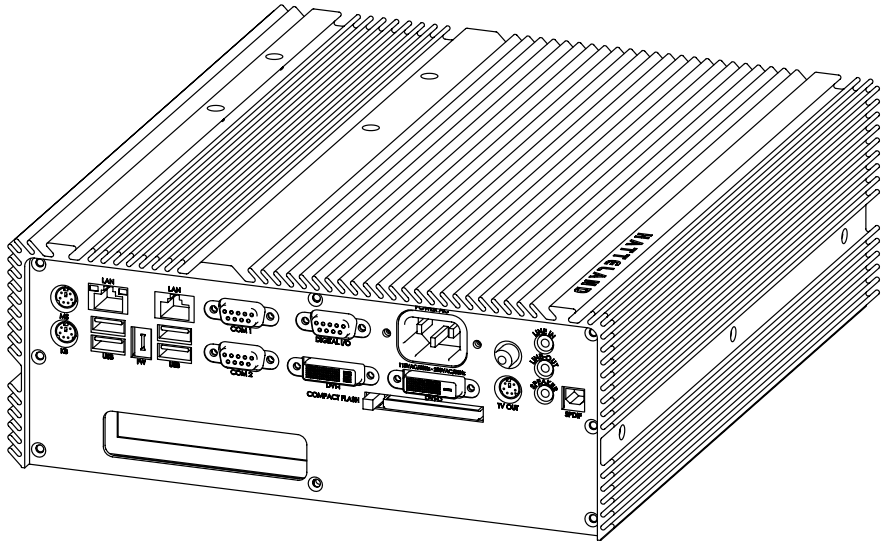
USER MANUAL



HT B08CD STD - Maritime Stand-alone Computer

User Manual HT B08CD STD	
Updated: 28 Mar 2007	Doc Id: INB100032-2 (Rev 1)
For models: -A1	Slim User Manual

jhd HATTELAND® DISPLAY
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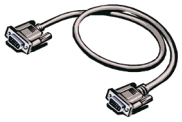
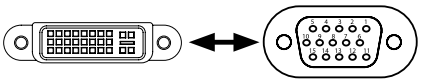
Contents of package

This product is shipped with:

Item	Description	Illustration
	1 pcs of Standard Power Cable. (European Type F “Schuko” or US Type B standard plug) Length 1.8m *Note: Power cable not included in the DC version.*	
	1 pcs of Standard DVI > RGB Signal Cable. DVI-I 17P Male to HD-15 DSUB Male - Length 2m	
	Documentation/Drivers/Software CD(s) for factory installed components like mainboard, IDE, network etc.	
	1 pcs of User Manual (Slim version) **Note**: The separate documentation for third party components may be available on attached CD. The printed manual only covers specific information for Hatteland products, and not third party components.	
	1 pcs of configuration, test report and checklist sheets.	

General

Jakob Hatteland Display AS

KNOWLEDGE - QUALITY - VALUE

Introduction to Jakob Hatteland Display AS

Founded in 1987, Jakob Hatteland Display (JHD) offers the widest range of type approved marine monitors, panel computers and type approved marine computers for the worldwide commercial, naval, yacht and cruise market.

Today the group develops and manufactures a complete range of IEC 60945 tested marine monitors, panel computers and IEC 60945 tested marine computers.

“Design meets Functionality” - Series 2

ATTRACTION is more then just to show a nice picture on a screen. The new IEC60945 tested man-machine interfaces, offered by Jakob Hatteland Display AS, will fulfill the customers wish for outstanding design combined with the reliability of approved maritime Panel-Computers and Displays.

These IP rated products are meant to be usable in all maritime applications. By the proven optical bonding technology, the Panel Computers and Displays show drastically reduced reflection and enhanced optical performance. This truly allows inside or outside use of these products.

Cool is not only the design, but also the product by intelligent heat dissipation and reduced heating storage. Using state-of-the-art components such as LCD-TFT Modules and ETX-PC bases industrial computers, long-term availability and serviceability is secured.

Flexibility in application and service friendliness is achieved by a unique backpack solution, whereas the detachable backpack contains the “intelligence” of the product.

The extreme small form factor used on this product line with a general depth of only 75mm (!) and for example for the 19in with 416 (W) x 372 (H) mm, allows new-builds and retrofit installation almost everywhere.

The flush mounted glass front shows only what is necessary: the content of the picture. The frameless design can smoothly be integrated into a console or it can be used as table mounted device (bracket version). A console version are also available for installment on flybridges with IP66 rating.

This new HATTELAND® Series 2 Panel Computers MMC2 and Displays MMD2 will be available from Q2 2006 onwards in 12in., 15in. and 19in. sizes. The concept allows easy scaling in sizes from small LCD screens up to large sizes of more than 32in LCD wide-screens. This outstanding and affordable product range offers a wide choice for different needs.

Approved Marine Displays (MMD/STD) - Series 1

Hatteland Display’s marine monitors are based on high quality and state-of-the-art components with the highest specifications, and meet all requirements for harsh maritime use. The displays are easily integrated into your system, due to standardized products and features.

The MMD (Maritime Multi Display) series consists of sizes ranging from 10in to 23in.

Specifically designed for navigation and automation systems on ships, these certified LCD monitors comply to IP66 described in IEC 60925, are tested according to IEC 60945 and are approved by major classification societies such as ABS, BV, ClassNK, DNV, GL and LR. Further to this marine standard, the 19in MMD, the 20in MMD and the 23in MMD marine monitors are also available as ECDIS and ARPA radar-compliant units.

Jakob Hatteland Display AS

Approved Marine Panel Computers (MMC) - Series 1

The combination of the reliable design of the marine TFT-LCD modules, together with industrial computer boards, allows Hatteland Display to offer a product range for customer applications where space is critical and full function is desired in a single unit. In particular, the standardized ETX-board form factor allows full flexibility when it comes to processor choice. Because of multiple useful standard components we can offer a highly attractive commercial package

The MMC (Maritime Multi Computer) series consist of sizes ranging from 10in to 23in.

These products have also been designed for typical marine applications in navigation, automation and other systems. Following Hatteland's philosophy, these marine panel computers are fully tested according to IEC 60945 and are designed for type approval.

Approved stand-alone and rack-mounted marine computers

Two concepts are followed to offer variation in size, function and expansion slots for customers: approved black-box computers for limited space and approved computers for standard 19in racks, which offer a high degree of expansion. Configurations according to customer wishes are implicit, such as the operating system, CD-burner, RAM, graphic card, HD, add-on cards, factory installed software and many, many more.

The approved computers are tested according to IEC 60945 and IACS E10 and meet the requirements for IEC 61174 (ECDIS). Several approvals by major classification societies such as ABS, BV, ClassNK, DNV, GL and LR are available or pending.

Flexible display solutions and night vision facilities

All JHD Type Approved displays, panel computers and marine computers provide maximum flexibility for customer applications. JHD offers all products with AC or DC power supply, and marine displays and marine panel computers have a fully linear dimmable function for night vision.

Upon customer request, specific color, mechanical and electrical function designs can be implemented. Many more options are also available such as, sun visors, mounting brackets, different Windows or Linux operating systems and touch screens. All products are designed and manufactured by JHD in Nedre Vats, Norway. The production and configuration of all products takes place within Hatteland's high capacity production plant#1 (opened in September 2003) in Nedre Vats, Norway.

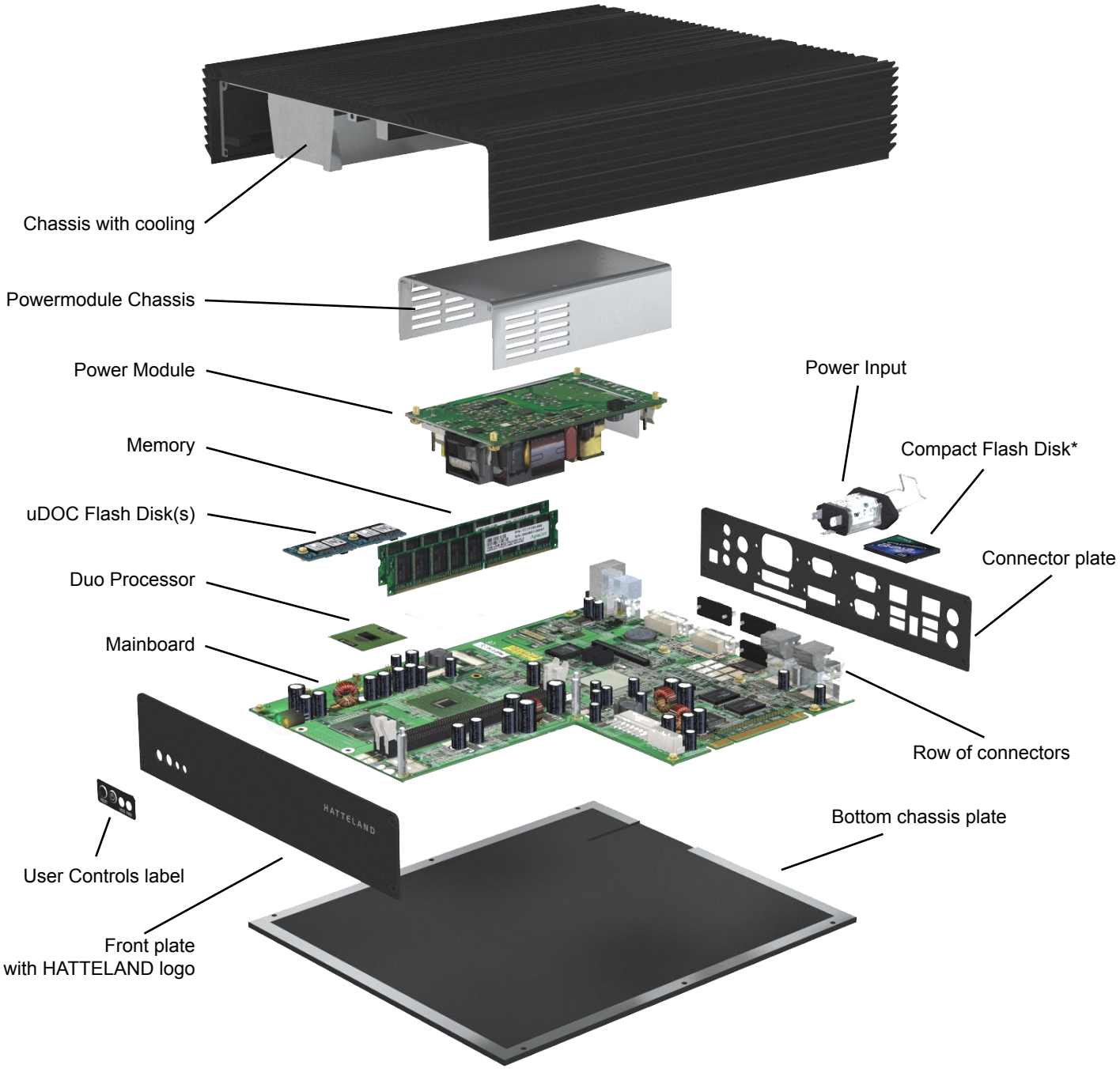
Hatteland's production facilities are designed for future expansion, which has enabled the creation of plant#2, our Optical Technology facility, opened in October 2006. The chosen materials for the production of our products are high grade industrial components able to fulfil form, fit and function requests.

About this manual

The manual contains electrical, mechanical and input/output signal specifications. All specifications in this manual, due to manufacturing, new revisions and approvals, are subject to change without notice. However, the last update and revision of this manual are shown both on the frontpage and also in the "Revision History" chapter. Please use that as a reference.

Furthermore, for third party datasheet and user manuals, please see dedicated interactive CD (where included) delivered with the product or contact our sales personnel for support. Please see the Contents Of Package chapter in the beginning of this manual to determine if a dedicated manual CD are included.

Basic Construction
Fanless Stand-alone Computers

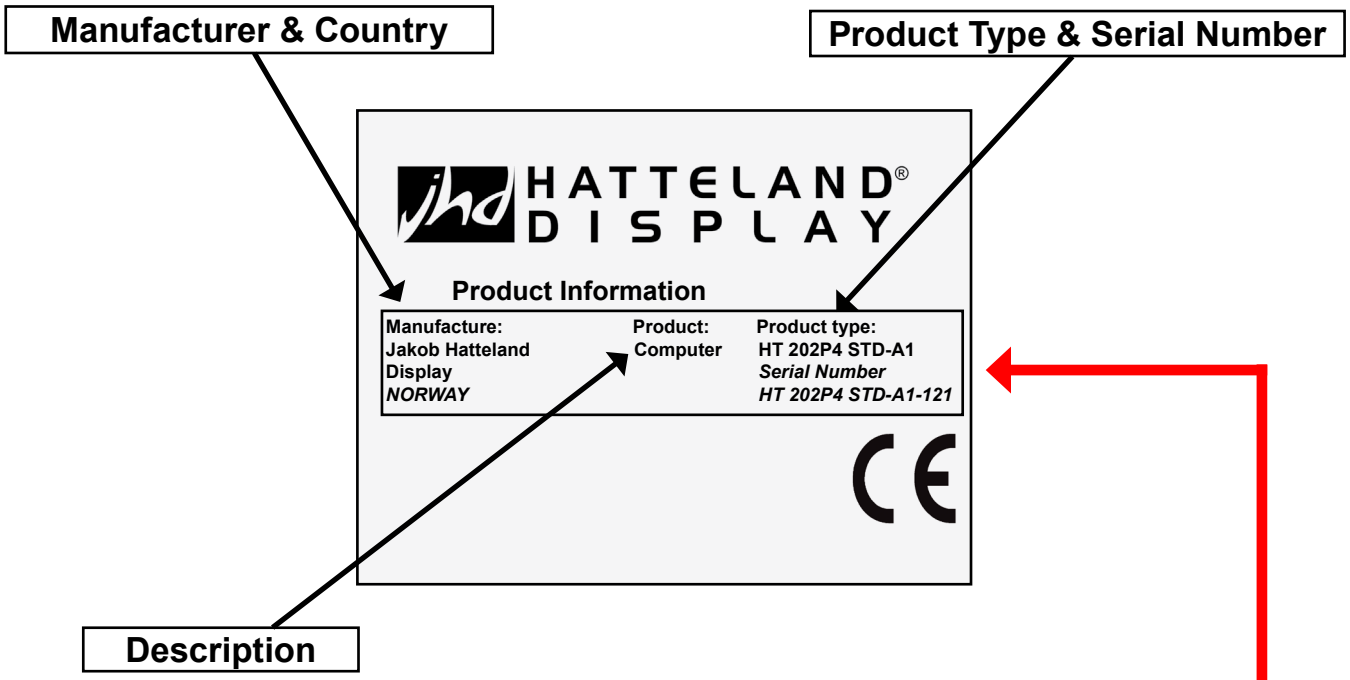


General illustration

* Please note that compact flash disk is NOT part of a factory standard defined product, but available optionally or included with a custom product solution.

Product Labels (Example)

Serial Number Label



Product Type & Serial Number

```
HT XXAXX AAA-AX-XXX NOMENCLATURE
HT 202P4 STD-A1-121 Example
                  Serial Number
                  Intern Version (AC-Odd / DC-Even number)
                  Standard or Custom product version
                  CPU Type
                  Cabinet Version
                  Rack Size (2U,4U etc.)
                  Hatteland Display (manufacturer)
```

Warranty Label

If you are to perform service on a unit still under warranty, any warranty will be void if this label is attempted removed / re-glued or removed completely. This label is useally located on the back of the product and near the serial number label. This is to help our service department to better determine if there has been any unauthorized service on a product still under warranty.

Installation

General Installation Recommendations

Installation and mounting of computers

1. Most of our units are intended for various methods of installation or mounting (rack mounting, panel mounting, bracket mounting, ceiling/wall mounting); for details, please see the relevant mechanical drawings.
2. Adequate ventilation is a necessary prerequisite for the life of the unit. The air inlet and outlet openings must definitely be kept clear; coverings which restrict ventilation are not permissible. The product might be without any ventilation aperatures which means pt.2 does not apply.
3. Exposure to direct sunlight can cause a considerable increase in the temperature of the unit, and might under certain circumstances lead to overtemperature. This point should already be taken into consideration when the bridge equipment is being planned (sun shades, distance from the windows, ventilation, etc.)
4. Space necessary for ventilation, for cable inlets, for the operating procedures and for maintenance, must be provided.
5. To further improve the cooling of the unit we recommend installing Cooling Fans underneath blowing upwards into the unit air inlet. This may be required in high temperature applications and also when there is reason to expect temperature problems due to non-optimal way of mounting.

General mounting instructions

1. The useful life of the components of all Electronics Units generally decreases with increasing ambient temperature; it is therefore advisable to install such units in air-conditioned rooms. If there are no such facilities, these rooms must at least be dry, adequately ventilated and kept at a suitable temperature in order to prevent the formation of condensation inside the unit.
2. With most Electronic Units, cooling takes place via the surface of the casing. The cooling must not be impaired by partial covering of the unit or by installation of the unit in a confined cabinet.
3. In the area of the wheel house, the distance of each electronics unit from the magnetic standard compass or the magnetic steering compass must not be less than the permitted magnetic protection distance. This distance is measured from the centre of the magnetic system of the compass to the nearest point on the corresponding unit concerned. The exact distance is often mentioned in the specific product specifications.
4. Transportation damage, even if apparently insignificant at first glance, must immediately be examined and be reported to the freight carrier. The moment of setting-to-work of the equipment is too late, not only for reporting the damage but also for the supply of replacements.

Cables

Use only high quality shielded signal cables. For RGB/DVI cables use only cables with separate coax for Red, Green and Blue. We can supply a varity of high quality RGB/DVI, RS232, PARALLEL, LAN and USB cables intended for this use.

Ferrites

On selected products, the ferrites prevent high frequency electrical noise (radio frequency interference) from exiting or entering the equipment. To verify if your product require this, please see the “Physical Overview” chapter in this manual. The ferrites are part of the contents of the package also specified in the “Contents Of Package” chapter early in this manual. **The ferrites must be mounted on specific cables to fully comply with the Type Approvals!**

The ferrites should be mounted (clipped in place on the cable as shown in illustration) as close as possible to the cable connector on the rear side of the computer product. Open up the ferrite, place the cable inside as shown in FIG1, and then gently close it until a click can be heard (FIG2).

FIG1

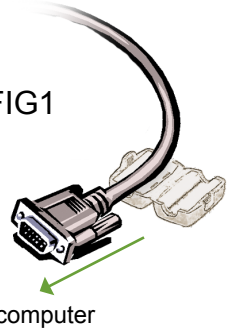
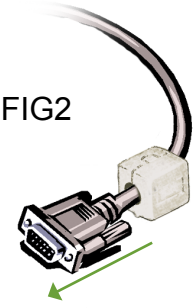
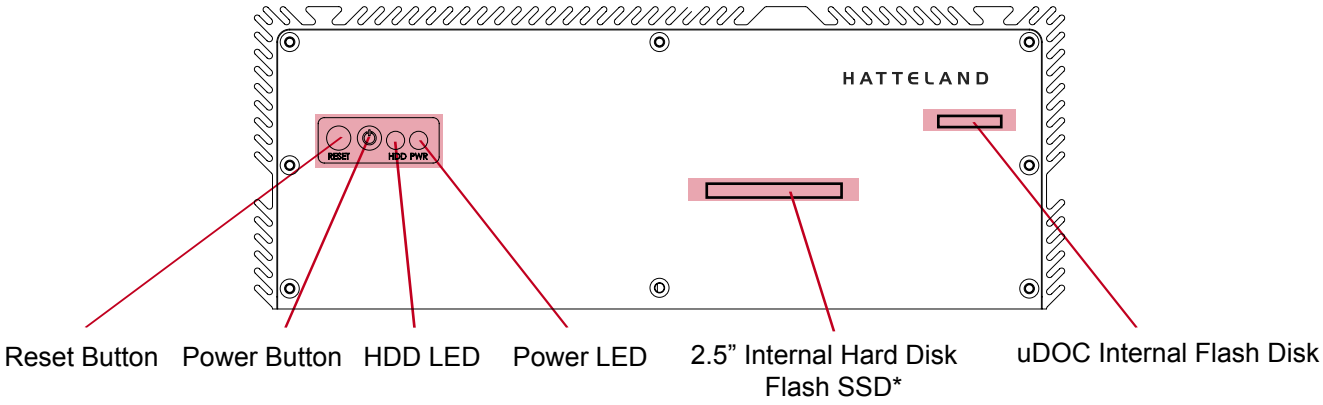


FIG2



Physical Overview - HT B08CD STD

Front / internal area of computer



Reset Button: (Hard Reset)

To reset the computer in case of severe software failure, press this button (it is mounted behind the edge of the casing, to access it use a screwdriver or a pen), This reset button is a hard reset which means the operating system will NOT be warned. Using this reset method may damage files and / or operating system in worst case scenarios. Precaution should be taken when using this. To perform a safe software reset, press either the power button, or use the operating system own reset functionality if possible.

PWR

Power Button & Power LED:

To turn ON the computer, press down button and release it immediately. The power indication (LED) will turn green and any operating system will automatically boot. To turn OFF the computer, press down this button and hold it for 3 seconds. The operating system may require additionally tasks to be performed before computer shuts down and turns off the unit.

HDD

Hard Disk LED (HDD LED):

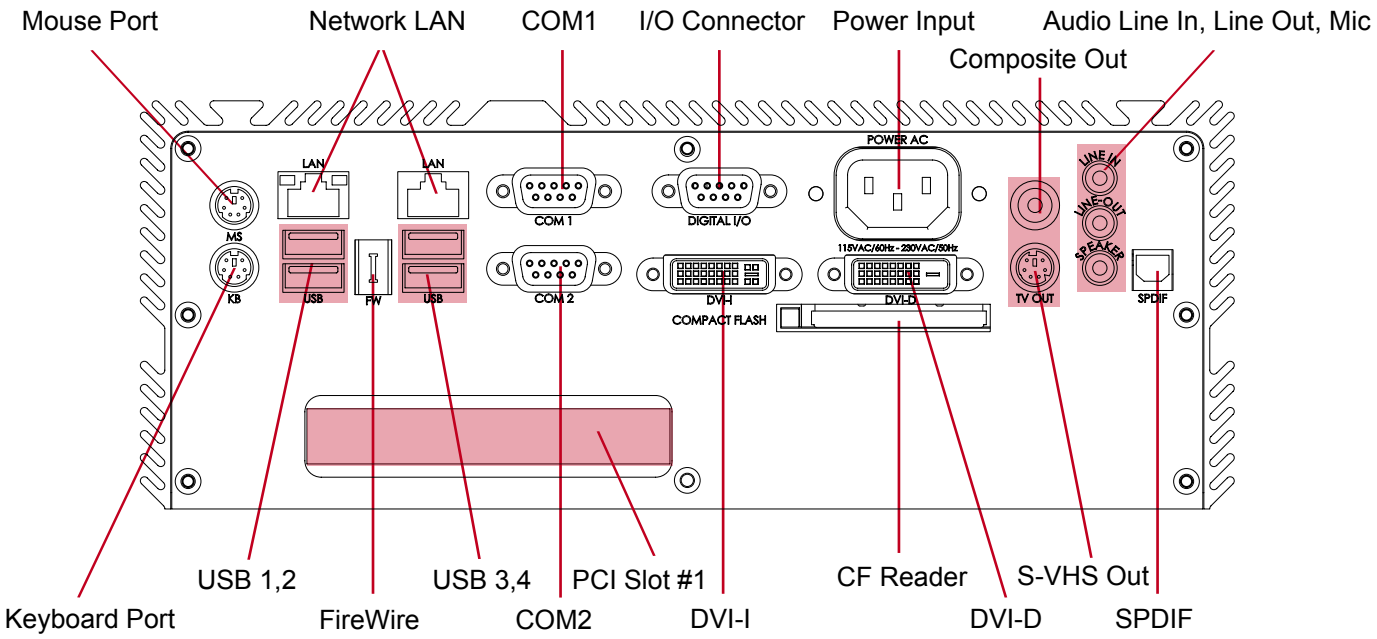
The hard disk indication (LED) will turn orange when there occur read / write activity to / from the hard disk.

2.5” internal Hard Disk (Flash SSD) and/or uDOC Flash Disk:

Any of these may function as the main data storage (hard drive) for the unit. The operating system will be placed on this, normally visible as drive C:. The unit supports 2 x 2.5” Hard Disk (Flash SSD) with sizes starting from 32GB with future support for larger sizes and/or 2 x uDOC Flash Disks with sizes starting from 4GB with future support for larger sizes. This is normally a factory installed option. They are mounted inside the unit and is not visible/accessible from the outside.

Physical Overview - HT B08CD STD

Connector area of computer



PS/2 Mouse and PS/2 Keyboard INPUTS:

Connect the PS/2 mouse cable to the PS/2 5P Connector (female) marked with MS.
Connect the PS/2 keyboard cable to the PS/2 5P Connector (female) marked with KB.

Network INPUT/OUTPUT:

Supports 10/100Mbps Ethernet (LAN). Suitable for twisted pair cables CAT.5E. Make sure the network cable connector ”clicks” into the RJ-45 connector.

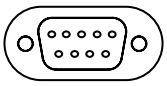
USB1,2,3,4 INPUT/OUTPUT:

Supports any USB1.1 (12Mbps) or USB2.0 (480Mbps) compliant peripherals. Drivers for most USB devices are usually included in operating system or on separate installation CD’s delivered with Third Party products. USB 1.1 devices will operate in USB 1.1 mode (12 Mbps).

IEEE1394 Firewire INPUT/OUTPUT:

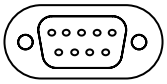
Supports any compliant Firewire peripherals. Drivers for most Firewire devices are usually included in operating system or on separate installation CD’s delivered with Third Party products. Firewire operates with 400 Mbps.

Physical Overview - HT B08CD STD



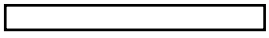
COM1 Serial Port INPUT/OUTPUT:

Supports RS-232 (opto isolated) using D-SUB 9P Male connectors. Fasten the cable to the connector using the provided screws on the cable housing itself.



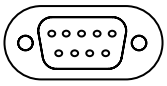
COM2 Serial Port INPUT/OUTPUT:

Supports RS-232/422/485 using D-SUB 9P Male connectors. Fasten the cable to the connector using the provided screws on the cable housing itself.



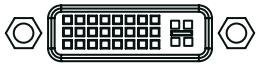
PCI Slot #1:

Supports PCI (Half Length Profile) card in one available slot. PCI cards is normally installed from factory or returned to factory for upgrading if needed. Note that warranty will be void if you install PCI cards yourselves. In order to mount PCI cards, the chassis of the unit must be removed, thus making warranty void as the warranty sticker would have to be broken.



DIGITAL INPUT/OUTPUT:

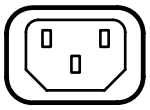
1 x D-SUB 9P Male connectors. This is a digital i/o interface with 3 channels available. This is a feature connector and is primarily reserved for future and custom applications. But, in general it can be configured for use with custom applications where external signals may need to be monitored or controlled via custom software. Fasten the cable to the connector using the provided screws on the cable housing itself.



DVI-I and DVI-D OUT:

Connect your DVI cables to the DVI-I or DVI-D 24P Connectors (female) on the rear side of the unit. The DVI-I connector can function as regular RGB OUT by using a DVI-I > RGB/VGA adapter. DVI-D connector is strictly for DVI use only. Screw the DVI cables to the connectors and make sure you don't bend any of the pins inside the cable connector when connecting. Please see graphics card manual available on attached documentation CD.

Physical Overview - HT B08CD STD



Power INPUT:

The internal AC power module supports both 115VAC/60Hz and 230/50Hz power input using a standard IEC European power plug.

CompactFlash Reader:

CompactFlash Reader supports Type I & II cards. Insert the card gently into the slot with the logo facing upwards. The card is removed by pressing the EJECT button next to the card slot. A wide range of card sizes are supported. Cards inserted into this slot can also be booted.

TV OUT / COMPOSITE OUT:

Connect your composite video signal cable into the RCA jack plug. This will output/clone the DVI output, or be software configured to show full screen video playback whilst leaving the operating system desktop free for other uses.

TV OUT / S-VIDEO OUT:

Connect your S-Video (SVHS) video signal cable into the mini 4-way din plug. It can only be inserted one way and make sure you don't bend any of the pins inside your cable.
This will output/clone the DVI output, or be software configured to show full screen video playback whilst leaving the operating system desktop free for other uses.

Audio INPUT/OUTPUT:

All connectors are 3.5" Jack Stereo. AC'97 audio support. Either function as Stereo Line In, Stereo Line Out and Stereo MIC In or as 6-channel surround out where configuration is as follows:

Line In - Rear Sound L/R
Line Out - Front Sound L/R
Mic In - Center/Subwoofer Sound.

These settings can be modified within the audio driver software.

SPDIF OPTICAL TOSLINK OUTPUT:

Enables optical transfer of the audio signal out to any optical SPDIF compliant equipment with the appropriate cable. The optical interface is protected behind 2 mini hinged plastic doors which will slide away when a connector/cable is inserted gently.

Specifications

Specifications - HT B08CD STD

Note: All specifications are subject to change without prior notice!

TECHNICAL DESCRIPTION

Computer Specifications: (Standard Model)		**Connector Type:**
• Installed OS	: None, please specify when ordering	
• Processor	: 1 x Intel® Core Duo™ processor (Dual Core 1.66GHz, 667MHz FSB, 2MB L2 Cache)	
• Graphics	: On-board Intel® GMA950 Graphics Chipset - Dual DVI (DVI-I & DVI-D)	1 x DVI-I & 1 x DVI-D
• System Chipset	: Intel® 945GM with ICH7M	
• BIOS	: Award BIOS	
• PCI Slots	: 1 x PCI3.0 Slot 32-bit, 3V and 5V Interface, Half Length Profile	
• Expansion Slots	: 1 x MiniPCI-Express socket	
• Compact Flash	: 1 x CompactFlash Reader Type I/II with eject button	
• Ethernet	: 2 x 10/100Mbps Realtek RTL8100C-LF with Wake-On-Lan	2 x RJ-45
• Serial Ports	: 1 x RS-232 (Opto isolated) + 1 x RS-232/422/485	2 x DB9M
• Firewire	: 1 x IEEE1394 Firewire 400Mbps - TI TSB43LV22	1 x IEEE1394 FireWire
• USB Ports	: 4 x USB ports - Supports 2.0 & 1.1	4 x USB Type A
• Keyboard Port	: Standard PS/2 mini DIN connector	1 x PS/2
• Mouse Port	: Standard PS/2 mini DIN connector	1 x PS/2
• Audio	: AC-97, 6-channel, LINE IN, LINE OUT, AMPLIFIED LINE OUT (8-ohm 2W) 3.5mm**	3 x JACKS & 1 x SPDIF
• Video Outputs	: 1 x Composite + 1 x S-VIDEO	1 x RCA & 1 x SVHS
• Speaker	: On-board	
• Power Manager	: ACPI/APM	
• Digital IO Interface	: 3 x Digital IO Channels	1 x DB9M
• Other features	: WatchDog Timer 256 segments, Temperature Monitoring	

** AUDIO Connector is not yet type approved. Disable its function to comply with Type Approvals.

Power Specifications:		**Connector Type:**
Power Supply Options:		
• 115VAC/60Hz or 230VAC/50Hz	: Model HT B08CD STD-A1 (100W)	STD IEC
• Power Consumption - Operating	: TBD	

Available Component Options:

- Memory : Upgradeable to 4GB RAM DDR2 667MHz option - (2 DIMM sockets on-board)
- Storage#1 : 2 x uDOC Flash Disk Option - Up to 4GB available and future support for larger sizes possible.
- Storage#2 : 2 x 2.5" Hard Disk (Flash SSD) Option (32GB each). RAID 0 & 1 - When available.

Note: These options are factory installed.

Compass Safe Distance:	HT B08CD STD	Standard: TBD	Steering: TBD

MECHANICAL DESCRIPTION

Physical Specifications:

- 268 (W) x 100 (H) x 310 (D) mm
- Weight: 5 kg (approx)
- Aluminium Cooling Chassis

Environmental Considerations:

Safety Considerations:

Even although the test conditions for bridge units provide for a maximum operating temperature of 55°C, continuous operation of all electronic components should, if possible, take place at ambient temperatures of only 25°C. This is a necessary prerequisite for long life and low service costs.

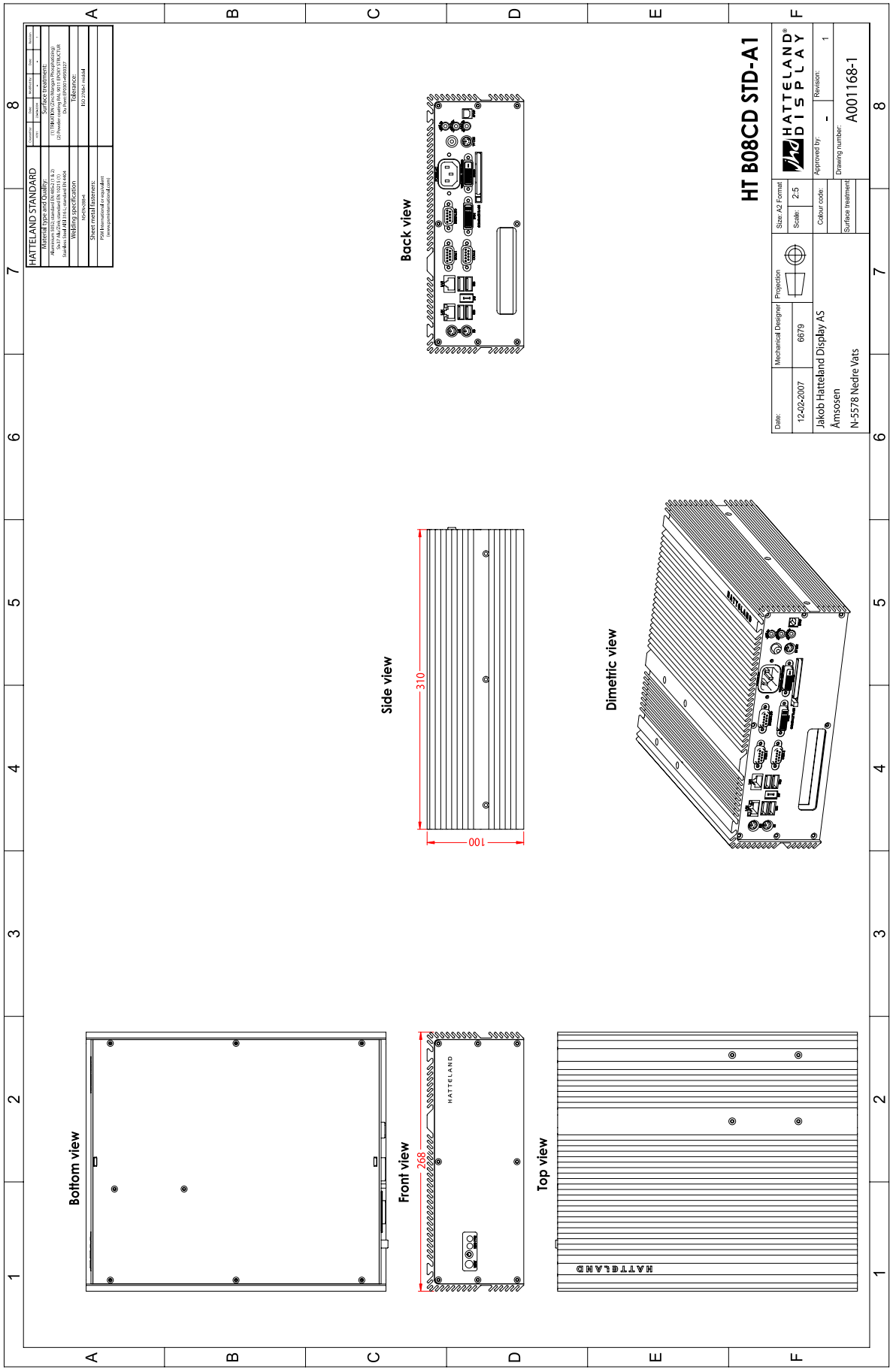
APPROVALS & CERTIFICATES

These products have been tested / type approved by the following classification societies:

EN60945 4th (IEC945 4th)
IACS E10

Technical Drawings

Technical Drawings - HT B08CD STD-A1



Due to dimensions without decimals, the tolerance on drawings is +/- 1mm (For accurate measurements, measure in AutoCAD)
Technical drawings (.DWG format) are found on our internet site: http://www.hatteland.com

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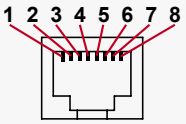
Appendixes

Pin Assignments - Common Connectors

Note: Not all connectors may be available on your specific product. This depends on the amount of additional hardware installed from factory, or customized solutions. These pin assignments are for the common connectors used. Connectors are seen from users Point Of View (POV).

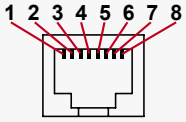
Pin Assignments - RJ45 10/100 LAN



Pin 01 - TDP	Transmit Differential Pair (Positive)
Pin 02 - TDN	Transmit Differential Pair (Negative)
Pin 03 - RDP	Receive Differential Pair (Positive)
Pin 04 - NC	Not Connected
Pin 05 - NC	Not Connected
Pin 06 - RDN	Receive Differential Pair (Negative)
Pin 07 - NC	Not Connected
Pin 08 - NC	Not Connected

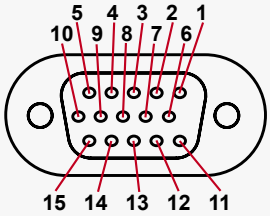
Use category 5 - twisted pair cable

Pin Assignments - RJ45 10/100/1000 GBLAN



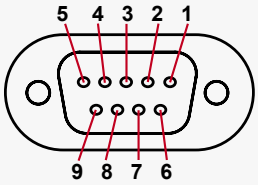
Pin 01 - D0P	Differential Pair 0 (Positive)
Pin 02 - D0N	Differential Pair 0 (Negative)
Pin 03 - D1P	Differential Pair 1 (Positive)
Pin 04 - D2P	Differential Pair 2 (Positive)
Pin 05 - D2N	Differential Pair 2 (Negative)
Pin 06 - D1N	Differential Pair 1 (Negative)
Pin 07 - D3P	Differential Pair 3 (Positive)

Pin Assignments - 15P HD RGB VGA



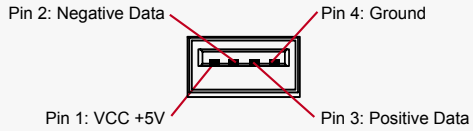
Pin 01	Red, analog
Pin 02	Green, analog
Pin 03	Blue, analog
Pin 04	Reserved for monitor ID bit 2 (grounded)
Pin 05	Digital ground
Pin 06	Analog ground red
Pin 07	Analog ground green
Pin 08	Analog ground blue
Pin 09	+5V power supply for DDC (optional)
Pin 10	Digital ground
Pin 11	Reserved for monitor ID bit 0 (grounded)
Pin 12	DDC serial data
Pin 13	Horizontal sync or composite sync, input
Pin 14	Vertical sync, input
Pin 15	DDC serial clock

Pin Assignments - 9P Serial COM RS232

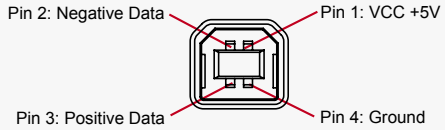


Pin 01 - DCD	Data Carry Detect
Pin 02 - SIN	Serial In or Receive Data
Pin 03 - SOUT	Serial Out or Transmit Data
Pin 04 - DTR	Data Terminal Ready
Pin 05 - GND	Ground
Pin 06 - DSR	Data Set Ready
Pin 07 - RTS	Request To Send
Pin 08 - CTS	Clear To Send
Pin 09 - RI	Ring Indicate

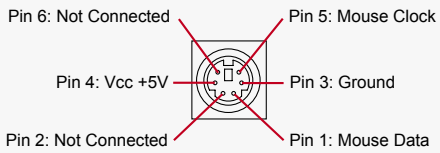
Pin Assignments - USB TYPE A



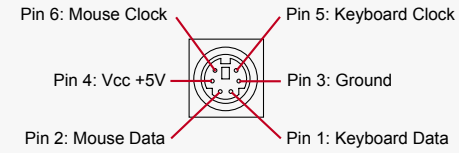
Pin Assignments - USB TYPE B



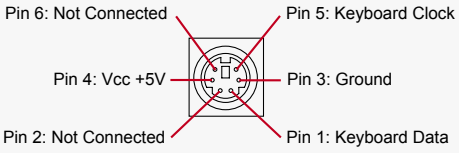
Pin Assignments - 5P PS/2 MOUSE



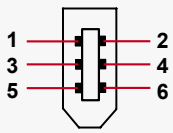
Pin Ass. - 5P PS/2 KEYBOARD+MOUSE Combined



Pin Assignments - 5P PS/2 KEYBOARD



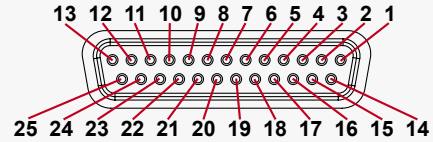
Pin Assignments - FIREWIRE IEEE-1394



Pin 01 - VCC	Power
Pin 02 - GND	Grounding for power and inner cable shield
Pin 03 - TPB-	Twisted Pair B- Receive Strobe, Transmit Data
Pin 04 - TPB+	Twisted Pair B+ Receive Strobe, Transmit Data
Pin 05 - TPA-	Twisted Pair A- Transmit Strobe, Receive Data
Pin 06 - TPA+	Twisted Pair A+ Transmit Strobe, Receive Data

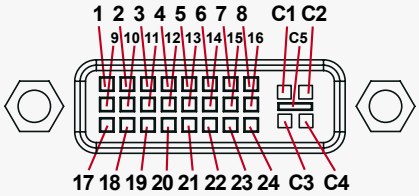
Pin Assignments - Common Connectors

Pin Assignments - 25P Parallel



Pin 01 - STROBE	This signal indicates to the printer that data at PD7..0 are valid.
Pin 02 - DATA0	Parallel data bus from PC board to printer. The data line are able to operate in PS/2 compatible bi-directional mode.
Pin 03 - DATA1	Same as Pin 02
Pin 04 - DATA2	Same as Pin 02
Pin 05 - DATA3	Same as Pin 02
Pin 06 - DATA4	Same as Pin 02
Pin 07 - DATA5	Same as Pin 02
Pin 08 - DATA6	Same as Pin 02
Pin 09 - DATA7	Same as Pin 02
Pin 10 - ACK	Signal from printer indicating that the printer has received the data and is ready to accept further data.
Pin 11 - BUSY	Signal from printer indicating that the printer cannot accept further data.
Pin 12 - PE	Signal from printer indicating that the printer is out of paper.
Pin 13 - SELECT	Signal from printer to indicate that the printer is selected.
Pin 14 - AUTO FEED	This active low output causes the printer to add a line feed after each line printed.
Pin 15 - ERR#	Signal from printer indicating that an error has been detected.
Pin 16 - INIT#	This active low output initialises (resets) the printer.
Pin 17 - SLIN#	Signal to select the printer sent from CPU board to printer.
Pin 18 - GND	Ground
Pin 19 - GND	Ground
Pin 20 - GND	Ground
Pin 21 - GND	Ground
Pin 22 - GND	Ground
Pin 23 - GND	Ground
Pin 24 - GND	Ground
Pin 25 - GND	Ground

Pin Assignments - 24P DVI-D & DVI-I



Pin 01	T.M.D.S. Data2 - (Digital - RED link 1)
Pin 02	T.M.D.S. Data2 + (Digital + RED link 1)
Pin 03	T.M.D.S. Data2/4 Shield
Pin 04	T.M.D.S. Data4 - (Digital - GREEN link 2)
Pin 05	T.M.D.S. Data4 + (Digital + GREEN link 2)
Pin 06	DDC Clock
Pin 07	DDC Data
Pin 08	Analog Vertical Sync (DVI-I only)
Pin 09	T.M.D.S. Data1 - (Digital - GREEN link 1)
Pin 10	T.M.D.S. Data1 + (Digital + GREEN link 1)
Pin 11	T.M.D.S. Data1/3 Shield
Pin 12	T.M.D.S. Data3 - (Digital - BLUE link 2)
Pin 13	T.M.D.S. Data3 + (Digital + BLUE link 2)
Pin 14	+5V Power (for standby mode)
Pin 15	Ground (for +5V and analog sync)
Pin 16	Hot Plug Detect
Pin 17	T.M.D.S. Data0 - (Digital - BLUE link 1) and digital sync.
Pin 18	T.M.D.S. Data0 + (Digital + BLUE link 1) and digital sync.
Pin 19	T.M.D.S. Data0/5 Shield
Pin 20	T.M.D.S. Data5 - (Digital - RED link 2)
Pin 21	T.M.D.S. Data5 + (Digital - RED link 2)
Pin 22	T.M.D.S. Clock Shield
Pin 23	T.M.D.S. Clock + (Digital clock + (Links 1 and 2)
Pin 24	T.M.D.S. Clock - (Digital clock - (Links 1 and 2)
Pin C1	Analog RED
Pin C2	Analog GREEN
Pin C3	Analog BLUE
Pin C4	Analog Horizontal Sync.
Pin C5	Analog Ground (return for RGB signals)

DDC = Display Data Channel /// T.M.D.S = Transition Minimized Differential Signal /// PIN C1,C2,C3,C4 = Only present on DVI-I connectors.

Additional connector pinouts may be available in third party motherboard manuals, primarly for computers only. Please see manual/drivercd delivered with your product.

Basic Trouble-shooting

COMMON ERRORS: (This is a generic description of possible issues for a varity of products)
If for some reason there should be something wrong with the picture quality or no picture present, check the symptoms carefully and try to cure it with the hints below:

NO PICTURE / LED BEHAVIOUR:
If there is no light at all in the LED at the FRONT, check power cables. If the LED in front is green then check if the brightness knob is turned to the right (max brightness). If still no picture, check if there is a VGA signal on the External VGA connector. If you have a picture on the external VGA connector please look in BIOS documentation/chapter for correct display settings in BIOS. Lack of image is most likely to be caused by incorrect connection, lack of power, or wrong BIOS settings.

SCROLLING / UNSTABLE IMAGE:
Signal cable may not be completely connected to computer or TFT display. Check the pin assignments and signal timings of the display and your video card with respect to recommended timing and pin assignments. Make sure that the video card is compatible and that it is properly seated / installed on the computer.

DISPLAY AREA IS NOT CENTERED / SIZED CORRECTLY
Make sure that a supported video mode has been selected on the display, or on the video card / system. If it is impossible to position the image correctly, i.e. the image adjustment controls will not move the image far enough, then test it again using another graphics card for the PC system. This situation may occur with a custom graphics card that is not close to standard timings or if something is in the graphics line that may be affecting the signal, such as a signal splitter (please note that normally a signal splitter will not have any adverse effect). If it is impossible to change to the correct resolution/color depth, check if you have the right VGA driver installed in your system.

IMAGE APPEARANCE:
A faulty TFT panel can have black lines, pixel errors, failed sections, flickering or flashing image.
Incorrect graphics card refresh rate, resolution or interlaced mode will probably cause the image to be the wrong size, it may scroll, flicker badly or possibly even no image is present. Sparkling on the display may be a faulty TFT panel signal cable, and it needs service attention.

RGB Signal Only:
Horizontal interference can usually be corrected by adjusting the PHASE (OSD menu).
Vertical interference can usually be corrected by adjusting the FREQUENCY (OSD menu).

DEW CONDENSATION BEHIND GLASS:
Note that this problem will not occur on bonded products. For non-bonded products, do the following: Power on the TFT product and set brightness to 100%. Turn off any automatic screensavers on PC or similar. During minutes the dew will be gone. To speed up the process, use a fan heater for a reasonable time. Do not overheat the TFT product.

CD-ROM FAILURE OR READ/DETECTION PROBLEMS:
If the product are operated/located in a area with extreme condensation, the CD/DVD drive may not work correctly due to condensation on the read head. Keep the product on for a while until it’s reached normal operating temperature, and retry accessing discs. Otherwise, consider using USB memory sticks or alternative storage devices.

NO CD-ROM AVAILABLE ON YOUR PRODUCT FOR INSTALLING DRIVERS/SOFTWARE:
Please use USB memory sticks, USB Floppy drive, USB CD-Rom Drive or alternative storage devices to transfer/install software on CD-ROM-less units.

Return Of Goods Information

Return of goods: (Applies not to warrenty/normal service/repair of products)
Before returning goods, please contact your system supplier before sending anything directly to JHD. When you return products after loan, test, evaulation or products subject for credit, you must ensure that all accessories received from our warehouse is returned to JHD.
This applies to cables, powermodules and additional equipment except screws or similar, user manual, datasheets or other written paper documents. Furthermore, the product must not have any minor / medium or severe scratches, chemical spills or similar on the backcover, front frame or glass.

This is needed to credit the invoice 100%. Missing parts will not be subject for credit, and you will not get total credit for returned product. You will either be charged separately or the amount is withdrawn from the credit. If you decide to ship the missing items on the after hand, you will get 100% credit for that particular invoice or items received at JHD incoming goods control.
Please contact our service/sales department if additional questions.

Current prices apply as per May 2004:

Signal Cable DSUB 15P Male or Female - Approx 1,8meters	Price: 170,- NOK each
Signal Cable BNC 5P - Approx 1,8meters	Price: 350,- NOK each
RS-232 serial cable DSUB 9P - Approx 1,8meters	Price: 80,- NOK each
Powercable 110 / 220 VAC (European or US standard) - Approx 1,8meters	Price: 50,- NOK each
Minor / Medium or severe scratches / chemical spill on backcover	Price: 1300,- NOK
Any scratch, chemical spill or similar on front frame (including glass)	Price: 2000,- NOK

(Prices are approx, and any deviation are evaulated during incoming goods control)

Approved packaging methods/materials: (Applies to all shipments to JHD)
When returning goods, please make sure you surround the product with the following material, whenever possible: Original packaging from JHD, firm foam material, bubble wrap or lots of PadPack paper or Foam chips/polyester wrapped in sealed plastic bags. In any case, always use a solid cardboard box to surround everything.

Not approved packaging methods/materials are: Foam chips, expanded polyester, clothes, nothing, or too little, or anything that will crumble and get into the ventilation holes of products and cardboard boxes that are not suitable to secure the product during shipment.

Terms

The Hatteland Group - Terms Of Sale And Delivery:

1) APPLICATION
The terms of sale and delivery include the following companies: Autostore AS, Jakob Hatteland Assembly AS, Jakob Hatteland Computer AS, Jakob Hatteland Display AS, Jakob Hatteland Logistics, Jakob Hatteland Supply AS and Jakob Hatteland Technology AS.

2) PRICE
a) The price is per each, if nothing else has been stated, VAT not included. Price is based on the prices from our suppliers, current custom rates, taxes, rate of exchange and international raw material prices. We reserve ourselves the rights to adjustments in case of alternation on the above mentioned.
b) Included in the price is the supplier's standard packing. In case of re-packing/smaller quantities we reserve ourselves the right to add an additional sum for warrantable packing according to CECC 0015 (Basic inspection for protection of electrostatic sensitive devices)

3) VALIDITY
If nothing else has been stated in our quotation, the offer is valid for 30 days from the date of quotation.

4) PACKAGE QUOTATION
A package quotation means that all the components offered, must be ordered by us. If one component or more are removed from the quotation, the prices given in the package quotation are not valid.

5) TERMS OF PAYMENT
Cash on delivery or payment in advance. Net granted for companies, schools and institutions only, according to agreement. In case of too late payment 1.5% interest/month will be charged. Seller has mortage rights in the goods delivered until the purchase price, additional interests and charges have been paid in full. Accepted bill is not considered as payment until it has been honoured in full.

6) TIME OF DELIVERY
The quoted time of delivery is based on information from our suppliers. We disclaim any responsibility for the consequences of any delay or cancellation from our suppliers. Belated delivery gives not solely the right for cancellation.

7) DELIVERY POINT OF TIME
Goods are considered delivered to customer when handed over to charterer.

8) FREIGHT / PACKING / FORWARDING FEE
Jakob Hatteland Display AS charge NOK 50,- in forwarding fee for orders below NOK 1000,-.
For orders below NOK 1000,- Jakob Hatteland Supply AS charge freight according to expenses, and NOK 25,- for packing. For handling requested beyond ordinary hours NOK 250,- is charged. Express service is charged with NOK 100,- + freight charges. All the companies charge freight according to expenses for orders above NOK 1000,-. VAT not included.

9) COMPLAINT
By receipt customer must check goods for obvious defects which have to be claimed within 8 days from receipt. Otherwise acceptance of complaint can not be counted on.

10) GUARANTEE / SERVICES
Time of guarantee is calculated from our date of shipment, and applies to the extent that we are covered by our supplier's guarantee regulations. The guarantee does no longer apply if:

I) there has been encroached upon the goods without seller's consent
II) terms of payment is not fulfilled
III) the goods have been damaged due to unskilled treatment
IV) components which are sensitive for static electricity have not been unpacked and treated in a secure way. Minimum requirements: CECC 00015's standards for handling of such components. The guarantee does not include fair wear and tear.

Terms

11) RESPONSIBLITY
Seller undertake to deliver faultless and functional capable goods according to existing technical specifications. Seller disclaim responsibility for any damage or loss which directly or indirectly may be caused due to failure or defect with the delivered goods, if carelessness from the seller can be limited up to the cost of the goods. The supplier's responsibility for defects with the supplied goods do not include secondary damage or loss.

12) CANCELLATION / RETURN
Binding sales contract is concluded when we have confirmed customer's purchase order. Any disagreements in our order confirmation must be reported to seller within 6 days. The agreement can not be altered without our permission, after acceptance from our supplier. If goods are wanted to be returned, a Return No must be assigned from seller. Returned goods without a Return No will not be accepted. By return of stock listed goods, 20% return fee is charged. Returned goods are shipped on customer's account and risk.

13) LOAN, RENT and DEMO
When borrowing of goods for demo/test, the date of return must be added to the document. If no date has been stated, date of return is two weeks from the date of the document. Before return, seller must be contacted for a Return No (RTK). Goods which have been sold with an agreed right of return within stated terms, shall also have a Return No. The Return No must be obtained before the stated date of return. Returned goods without a Return No, or which have not been packed in original packing, will not be accepted.

14) LIMITATIONS
If any of our suppliers claim limited delivery terms towards us, our terms of delivery will be restricted according to those.

15) SOFTWARE
Sold or borrowed software is not allowed to be copied or spread in other ways, without a written permission.

16) RE-EXPORT
Goods delivered from seller may be subject to special rules of exportation in their supplier's native country. Buyer is responsible to obtain necessary permissions for further export/re-sale.

17) QUESTION IN DISPUTE
To settle any dispute the Karmsund Herredsrett is approved the legal venue.

Terms

INSTRUCTIONS FOR THE CONSIGNEE

1) CONTROL
Control the goods immediately by receipt. Examine the quantity towards the invoice/packinglist/shipping documents. Look for outward defects on the packing which may indicate damage on or loss of contents. Control the container and the seals for any defects.

2) SECURING EVIDENCE
When defects on the goods have been found, evidence must be secured, and seller must be informed. Call the transporter and point out the defects. Add a description of the defects on the goods receipt, the forwarder's copy of the way-bill or on the driving slip.

3) RESCUE
Bound the damage. Try to restrict the damage and the loss. Seller will compensate expences incurred due to reasonable security efforts in addition to damage and loss.

4) COMPLAINT
Write immediately a complaint to the transporter or his agent. Forward immediately the complaint to the transporter or his agent, and hold the transporter responsible for the defects. The complaint must be sent at the latest:

- for carriage by sea: within 3 days
- for overland / air transportation within 7 days

5) DOCUMENTATION
For any claims the following documentation is required, and must be forwared to the company or their agent:
invoice, way-bill and/or bill of landing, and/or statement of arrival, inspection document, besides a copy of the letter of complaint to the transporter.

Notes

Revision History

Rev.	By	Date	Notes
1	SE	28 Mar 07	First release.

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